
Book Review

Electrochemical Phase Formation and Growth

by E. Budevski, G. Staikov and W.J. Lorenz, ISBN 3-527-29422-8, published by VCH, Weinheim, Germany, 1996, hardback £75.00, 410 pp.

This book presents the fundamentals of electrochemical metal deposition with emphasis on theoretical and structural aspects rather than on practical electroplating problems. The main topics covered are an introduction to crystal metal surfaces (structure, dynamics, surface diffusion), underpotential deposition (UPD), three dimensional overpotential deposition, deposition of/on single crystals and surface modification.

In the coverage of metal surfaces a concise summary is presented accompanied by a rigorous theoretical treatment. This complete treatment of the thermodynamics and kinetics of electrodeposition processes also characterises the rest of the book (in a rigorous but sometimes stiff style). Particular emphasis is given to the discussion of underpotential deposition and single crystals and also to the presentation of results obtained by modern in situ microscopies such as scanning

tunnelling and atomic force microscopy. Ultrathin film technology and surface nanoscale structuring and modification are also presented, as new areas of technological interest.

The book contains numerous up-to-date references and the compilation of experimentally studied UPD systems given in the appendices is probably the most complete of its kind. One of the main attractions of the book is its excellent illustrations, photographs and micrographs which are essential for an adequate discussion of crystal structures and presentation of results obtained at microscopic level.

Summarising, this is a rigorous, meticulously referenced book with impressive illustrations. It is written at an advanced level mainly for applied physicists, chemists and material scientists who want to go in depth into the fundamentals of electrodeposition and also have a compilation of up to date references available.

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